



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,564	08/30/2006	Bernardo Gabriel Mindlin	15670-057US1 SD2003-222	6479
20/985 7590 05/30/2008 FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022				
EXAMINER				
BORSETTI, GREG				
ART UNIT		PAPER NUMBER		
2626				
MAIL DATE		DELIVERY MODE		
05/30/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/568,564

**Applicant(s)**

MINDLIN ET AL.

**Examiner**

GREG A. BORSETTI

**Art Unit**

4141

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-21 is/are allowed.
- 6) ☒ Claim(s) 1-10 and 22-26 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date 2/17/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-26 are pending.

#### ***Information Disclosure Statement***

2. The Information Disclosure Statement (IDS) submitted on 2/17/2006 is in compliance with the provisions of 37 CFR 1.97.

#### ***Drawings***

3. The drawings filed on 2/17/2006 are accepted by the examiner.

#### ***Claim Objections***

4. Claims 24-26 are objected to because they claim dependency on claim 22, which does not have a reader head to provide antecedent basis for the claims. It is believed that claims 24-26 should be dependent on claim 23 instead and the examiner interpreted them to be dependent on claim 23 for the purposes of examination.

Claim 11 is objected to for being dependent on rejected independent claim 1.

#### ***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 19 of the claimed invention is directed to non-statutory subject matter. Claim 19 does not provide a concrete, useful or tangible result which brings into question the applicability of the claim to a technological application or machine to satisfy the requirements of 35 USC 101. The claim only recites a program per se. Correction is required.

Claim 22 of the claimed invention is directed to non-statutory subject matter. Claim 22 does not fall within one of the statutory categories (process, machine, manufacture, or composition of matter). The claim is directed to an abstract idea which does not fulfill the statutory requirement of 35 USC 101. Correction is required.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuschik et al. (US Pre-Grant Publication #20020152078).

**As per claim 1, Yuschik discloses:**

**a set of topological indices from an embedding of spectral functions of a speaker's voice**

[Yuschik, ¶ 0055] discloses "Another embodiment Of the present invention comprises a voiceprint identification system." It is well known in the art and shown to be inherent in [Yuschik, ¶ 0099] in a description of related art that "the parameters of a voice template quantify certain biometric characteristics of the speaker's voice, such as amplitude, frequency spectrum and timing, while the speaker utters the predetermined word or phrase." Amplitude, frequency, and timing are inherent spectral functions of a speaker's voiceprint. The voiceprint itself inherently provides indices of the parameters.

**using a selection of the topological indices as a biometric characterization of the speaker to identify and verify the speaker from other speakers**

[Yuschik, ¶ 0055] discloses "Another embodiment of the present invention comprises a voiceprint identification system." It is well known in the art and shown to be inherent in [Yuschik, ¶ 0099] in a description of related art that "the parameters of a voice template quantify certain biometric characteristics of the speaker's voice, such as amplitude, frequency spectrum and timing, while the speaker utters the predetermined word or phrase." The biometric characteristics are used as a voiceprint identification system which is used to identify and verify different speakers from one another.

**As per claim 2, claim 1 is incorporated and Yuschik discloses:**

**analyzing a voice sample from a second speaker to extract a set of topological indices for the second speaker**

[Yuschik, ¶ 0031] discloses "A database 102 stores records 104, each record corresponding to a subscriber of the voicemail system. **As shown in FIG. 2, each record 104 contains a voice template 200 of the corresponding subscriber's voice,** the subscriber's voicemail box number 202 and other information 204 necessary for the operation of the voicemail system." The database holds voice templates for a collection of speakers, which teaches a second speaker with topological indices because each voice template is a voiceprint. A voiceprint has been shown above in the rejection of claim 1 to anticipate the topological indices.

**comparing the set of topological indices for the second speaker to the set of topological indices for the speaker**

[Yuschik, ¶ 0034] discloses "**A comparator 120 compares the calculated voice template 118 to each of the retrieved voice templates 116.** If the calculated voice template 118 matches one of the retrieved voice templates 116 within the acceptance limits specified by the Type I and Type II error thresholds, the user 106 is considered identified and verified..." The voiceprint for the immediate speaker is compared against the speaker's in the database.

**verifying the second speaker as the speaker when there is a match between the set topological indices for the second speaker to the set of topological indices for the speaker**

[Yuschik, ¶ 0034] discloses "A comparator 120 compares the calculated voice template 118 to each of the retrieved voice templates 116. *If the calculated voice template 118 matches one of the retrieved voice templates 116 within the acceptance limits specified by the Type I and Type II error thresholds, the user 106 is considered identified and verified...*"

**identifying the second speaker as a person different from the speaker when there is not a match**

[Yuschik, ¶ 0035] discloses "On the other hand, if the calculated voice template 118 does not match any of the retrieved voice templates 116, the user 106 is prompted to speak her passcode again and the above-described process is repeated. After a predetermined number of retries, if the calculated voice template 118 still does not match any of the retrieved voice templates 116, the user 106 is prompted to enter her voicemail box number, and the user is identified and verified as in a conventional access control system." It would be inherent that when there is not a match, the speaker is not given access to the voicemail and thus the speaker is identified as a different person from the database (second speaker).

**As per claim 3, claim 1 is incorporated and Yuschik discloses:**

**extracting sets of topological indices from voices of different known speakers**

[Yuschik, ¶ 0031] discloses "A database 102 stores records 104, each record corresponding to a subscriber of the voicemail system. As shown in FIG. 2, each record 104 contains a voice template 200 of the corresponding subscriber's voice, the subscriber's voicemail box number 202 and other information 204 necessary for the operation of the voicemail system." The database holds voice templates for a collection of speakers, which teaches the extraction of topological indices from voices of different known speakers because the database holds known voiceprints of speakers.

**analyzing a voice sample from an unknown speaker to extract a set of topological indices for the unknown speaker**

It is well known in the art and shown to be inherent in [Yuschik, ¶ 0099] in a description of related art that "the parameters of a voice template quantify certain biometric characteristics of the speaker's voice, such as amplitude, frequency spectrum and timing, while the speaker utters the predetermined word or phrase." The biometric characteristics are used as a voiceprint identification system which is used to identify and verify different speakers from one another. The characteristics anticipate the topological indices and are taken from the unknown speaker for the purpose of identification.



**comparing the set of topological indices for the unknown speaker to the sets of topological indices for the known speakers to determine whether there is a match**

[Yuschik, ¶ 0034] discloses "**A comparator 120 compares the calculated voice template 118 to each of the retrieved voice templates 116.** If the calculated voice template 118 matches one of the retrieved voice templates 116 within the acceptance limits specified by the Type I and Type II error thresholds, the user 106 is considered identified and verified..."

**when there is match, identifying the unknown speaker as a known speaker whose set of topological indices matches the set of topological indices for the unknown speaker**

[Yuschik, ¶ 0034] discloses "A comparator 120 compares the calculated voice template 118 to each of the retrieved voice templates 116. **If the calculated voice template 118 matches one of the retrieved voice templates 116 within the acceptance limits specified by the Type I and Type II error thresholds, the user 106 is considered identified and verified...**"

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2626

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-7, 9-10, 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuschik et al. (US Pre-Grant Publication #20020152078) in view of Parra. (US Patent #5313556).

**As per claim 4, claim 1 is incorporated and Yuschik fails to disclose:**

**identifying the user as the speaker when there is a match**

[Yuschik, ¶ 0034] discloses "A comparator 120 compares the calculated voice template 118 to each of the retrieved voice templates 116. ***If the calculated voice template 118 matches one of the retrieved voice templates 116 within the acceptance limits specified by the Type I and Type II error thresholds, the user 106 is considered identified and verified...***"

**Yuschik fails to disclose, and Parra, in analogous art, teaches the above limitations,**

**storing the set of topological indices for the speaker in a portable device**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, are recorded on the magnetic strip of a credit bank, or charge card. At the point of use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention." Parra stores the voiceprint of the speaker on a portable device.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**obtaining a voice sample from a user in possession of the portable device**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, are recorded on the magnetic strip of a credit bank, or charge card. **At the point of use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention.**" The person speaks their name and is digitized, which teaches obtaining voice samples.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**analyzing the obtained voice sample form the user to extract a set of topological indices for the user**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, are recorded on the magnetic strip of a credit bank, or charge card. *At the point of use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention.*" The persons name is transduced to electrical signals, digitized and compared. It has been shown in Yuschik that topological indices are developed, however Fig. 3 of Parra also provides an image of topological information derived from the voice sample stored in the magnetic strip of the card.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**providing a reader device to read the set of topological indices for the speaker from the portable device**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, are recorded on the magnetic strip of a credit bank, or charge card. **At the point of use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention.**" If the name is transduced to be compared to the digitized signal present on the card (portable device), it would be inherent that there would be a reader device because the processing does not occur on the card (portable device).

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**comparing the set of topological indices for the speaker read from the portable device and the set of topological indices for the user to determine if there is a match**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, are recorded on the magnetic strip of a credit bank, or charge card. **At the point of**

**use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention.**" It has been shown in

Yuschik that there is a comparison, but it is also specifically stated in Parra that there is a comparison for identification purposes.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 5, claim 4 is incorporated and Yuschik fails to teach:**

**a magnetic storage device as the portable device**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, **are recorded on the magnetic strip of a credit bank, or charge card.** At the point of use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention."

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 6, claim 5 is incorporated and Yuschik fails to teach;**

**the portable device is a magnetic card and the set of topological indices for the speaker is stored in the magnetic card**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, are recorded on the magnetic strip of a credit bank, or charge card. **At the point of use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention.**" The magnetic card holds the information for comparison. The set of topological indices is stored on the magnetic card as a set of sub-audible portions of the total waveforms. Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide

additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 7, claim 6 is incorporated and Yuschik fails to teach:**

**the magnetic card comprises a magnetic strip that stores the set of topological indices for the speaker**

[Parra, column 2, lines 46-53] discloses "The digitized portions of the card owner's name (for example) voice samples, prepared as described herein, are recorded on the magnetic strip of a credit bank, or charge card. At the point of use, the card holder is requested to speak his or her name which is transduced to electrical signals, digitized and compared against a stored digital rendition using the principles of this invention."

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.



**As per claim 9, claim 4 is incorporated and Yuschik fails to teach:**

**using an electronic storage device as the portable device**

**Parra, in analogous art, teaches the above limitation,**

[Parra, column 5, lines 32-39] discloses in a discussion of prior art that "another feature of the system of U.S. Pat. No. 4,827,518 is that voice features are stored on a card. However, the system of the present invention proposes storing the digitized data on a magnetic strip mounted on a card similar in size to a credit card, whereas the card of U.S. Pat. No. 4,827,518 would actually contain printed circuits which would interact with the user interface terminals." A printed circuit on a card teaches an electronic storage. The patent is targeted to speaker verification so it is analogous art. Because it is discussed that the patent is prior art, it would be well known in the art that the portable device could be an electronic storage device.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 10, claim 4 is incorporated and Yuschik fails to teach:**

**using an optical storage device as the portable device**

[Parra, column 7, lines 17-23] discloses "A storage unit 25, which may be an optical CD, a magnetic memory, etc., stores a library of sonic profiles for individuals (bank customers, credit card users, and even known individuals) corresponding to the three dimensional display of FIG. 3 and supplies them to comparator 24 to compare against the sonic profiles or signatures from source 22." Parra teaches the use of an optical disk for the storage of the database. However, it is well known in the art that a CD (compact disk) is both an optical storage device and portable. It would be obvious to one of ordinary skill in the art that a CD could be used as a portable device.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 23, and Yuschik teaches:**

**a microphone to receive a voice sample from a speaker**  
**a reader head to read voice identification data of rational numbers that**  
**represent a known speaker from a portable storage device**

**a processing unit connected to the microphone and the reader head, the processing unit operable to extract topological information from the voice sample from the speaker to produce topological rational numbers from the voice sample and to compare the rational numbers of the known speaker to the topological rational numbers from the voice sample to determine whether the speaker is the known speaker**

Parra, in analogous art, teaches the above limitations,

**a microphone to receive a voice sample from a speaker**

[Parra, column 3, lines 12-15] discloses ***“the invention system involves first acquiring and storing a digitized voice sample. This is accomplished when a human subject speaks into a microphone*** connected to an analog-to-digital (AD) conversion circuit.”

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that “the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person.” The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**a reader head to read voice identification data of rational numbers that represent a known speaker from a portable storage device**

[Parra, Fig. 5] shows a card reader which reads the cards storing the voice data. The data stored on the card is digital, thus it would comprise rational numbers. Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**a processing unit connected to the microphone and the reader head, the processing unit operable to extract topological information from the voice sample from the speaker to produce topological rational numbers from the voice sample and to compare the rational numbers of the known speaker to the topological rational numbers from the voice sample to determine whether the speaker is the known speaker**

[Parra, column, lines ] discloses "When the card is presented for a prescribed activity requiring that the card carrier also be the card owner, the carrier is requested to speak a few words into microphone 35, the electrical analog signal is amplified by amplifier 36 and converted to digital signals by analog-to-digital converter 37, and the digital signal is presented to sonic profile extractor 38 to produce a digital signal corresponding to the sonic profile illustrated in FIG. 3, which sonic profile is supplied to microprocessor 39. Card 30 is passed through

slot 40S of card reader 40, which reads the digitally coded sonic profile off of the magnetic strip and supplies same to microprocessor 39 for comparison and, depending on the results of the comparison actuating a utilization device 41, which may be a signalling device to indicate a correlation or non-correlation and the identity which has been stored in the file voice file with the sonic profile." The topological rational numbers (digital representation inherently is composed of rational numbers) are generated from the sonic profile extractor and sent to the microprocessor. The card reader also sends the stored voiceprint data to the microprocessor where the two are compared for identification purposes. It would be obvious to someone of ordinary skill in the art that the sonic profile extractor and the microprocessor could be embodied on a single processing unit. Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 24, claim 23 is incorporated and Yuschik fails to teach:**

**the reader is a magnetic reader which reads data from a magnetic portable storage device**

[Parra, Fig. 5] shows the magnetic card reader that reads the magnetic strip off of a card.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 25, claim 23 is incorporated and Yuschik fails to teach:**

**the reader is an optical reader which reads data from an optical portable storage device**

[Parra, column 7, lines 17-23] discloses "A storage unit 25, which may be an optical CD, a magnetic memory, etc., stores a library of sonic profiles for individuals (bank customers, credit card users, and even known individuals) corresponding to the three dimensional display of FIG. 3 and supplies them to comparator 24 to compare against the sonic profiles or signatures from source 22." Parra teaches the use of an optical disk for the storage of the database. However, it is well known in the art that a CD (compact disk) is both an optical storage device and portable. It would be obvious to one of ordinary skill in the art that a CD could be used as a portable device. Furthermore, Parra discloses that

either the card or the database memory could be used for comparison, thus the use of a CD as an analogous device to the card is viable. Fig. 5 provides a card reader for the card and the use of the CD as an analogous substitution would make it obvious that the CD would have an optical reader to read it for comparison between the data stored on the CD and the spoken data by the user. Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

**As per claim 26, claim 23 is incorporated and Yuschik fails to teach:**

**the reader is an electronic reader which reads data from an electronic portable storage device**

[Parra, column 5, lines 32-39] discloses in a discussion of prior art that "another feature of the system of U.S. Pat. No. 4,827,518 is that voice features are stored on a card. However, the system of the present invention proposes storing the digitized data on a magnetic strip mounted on a card similar in size to a credit card, whereas the card of U.S. Pat. No. 4,827,518 would actually contain printed circuits which would interact with the user interface terminals." A

printed circuit on a card teaches an electronic storage. The patent is targeted to speaker verification so it is analogous art. Because it is discussed that the patent is prior art, it would be well known in the art that the portable device could be an electronic storage device. Furthermore, it would be obvious to someone of ordinary skill that if Parra has provided a card reader for the magnetic strip, and the magnetic card is used as an analogous substitution of the electronic card, that an electronic card reader would be a viable substitution for the magnetic strip reader.

Yuschik and Parra are analogous art because both pertain to voice identification. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Parra with the Yuschik device because Parra provide additional analysis in the fact that "the vibrations in the lower, sub-aural portion of the spectrum are substantially identical when compared from one voice sample to the next from the same person." The sub-aural analysis could be provided to Yuschik to better provide voice identification.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yuschik et al. (US Pre-Grant Publication #20020152078) in view of Parra. (US Patent #5313556) and further in view of Davis et al. (US Pre-Grant Publication #20020147588).

**As per claim 8, claim 4 is incorporated and Yuschik fails to fully teach:**



**the portable device has a surface that is printed with a bar code pattern and the set of topological indices for the speaker is stored in the bar code pattern**

**Davis, in analogous art, teaches the above limitation,**

[Davis, ¶ 0025] discloses "A commercially available and representative biometric scanning device 16 preferably includes an alphanumeric data input device 20 such as a keypad or other input means; a binary or other coded **data input device 22 that reads data from magnetic strips, bar codes,** or other recording media commonly carried on data cards and other types of cards." It would be obvious to someone of ordinary skill that the topological indices provided in Yuschik can be applied to a bar code on a card as embodied by an analogous medium as the magnetic card in Parra.

Yuschik and Davis are analogous art because both deal with biometric identification systems. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Davis with the Yuschik device because Davis provides methods and systems for interacting with a biometric verification system as in Yuschik. Davis provides different way of human interaction with the biometric device such that Davis could provide Yuschik with a multi-model method further assisting the initial voiceprint method.

***Allowable Subject Matter***

Dependent claim 11 is considered allowable subject matter. Although the prior art contains three-dimensional topological pattern matching for voice identification, the prior art does not teach the construction of a three-dimensional closed orbit based on the spectral properties to perform the topological pattern matching.

Independent claim 12 is considered allowable subject matter. As stated above, the prior art teaches the use of three-dimensional topological pattern matching for voice identification. However, the prior art does not teach the construction and comparison of three-dimensional periodic orbits as the topological analysis for voice identification. Dependent claims 13-18 are also considered allowable subject matter for being dependent on claim 12.

Independent claim 19 is considered allowable subject matter. The prior art fails to teach the use of periodic orbits in a three-dimensional space for the topological analysis to establish voice identification. Dependent claims 20-21 are also considered allowable subject matter for being dependent on claim 19.

***Conclusion***

8. Refer to PTO-892, Notice of References Cited for a listing of analogous art.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG A. BORSETTI whose telephone number is (571)270-3885. The examiner can normally be reached on Monday - Thursday (8am - 5pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHEMOND DORVIL can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Greg A. Borsetti/  
Examiner, Art Unit 2626

/Richemond Dorvil/  
Supervisory Patent Examiner, Art Unit 2626